# M62235P/FP

Switching power supply secondary side control

## Description

M62235 is a monolithic integrated circuit designed for switching power supply secondary side control.
Having one detection circuit to monitor and feedback 1 system output voltage to the primary side and the other detection circuit to output abnormal signal by detecting 2 system output overvoltage and 2 system output overcurrent, the number of external components on the secondary side can be reduced.
Overcurrent detection circuit has built-in delay circuit with external capacitor to prevent erroneous overcurrent detection by the instant output shortcircuit. Furthermore, compact design is made easy by10 pin small SOP package.

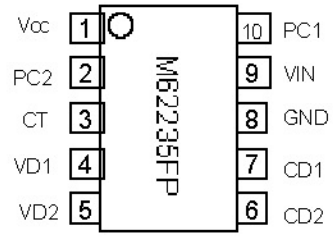
## Features

*1 system output voltage detection circuit(output voltage can be set arbitrary.)
*2 system overvoltage detection circuit built-in(without delay circuit)
*2 system overcurrent detection circuit built-in(with delay circuit)
*PC output current———10mA(max.)

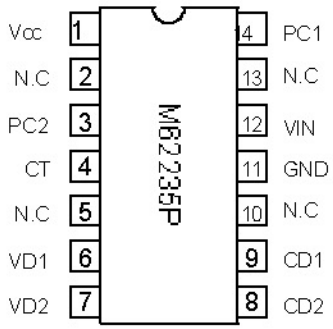
## Application

Flyback regulator

PIN CONFIGURATION(TOP VIEW)



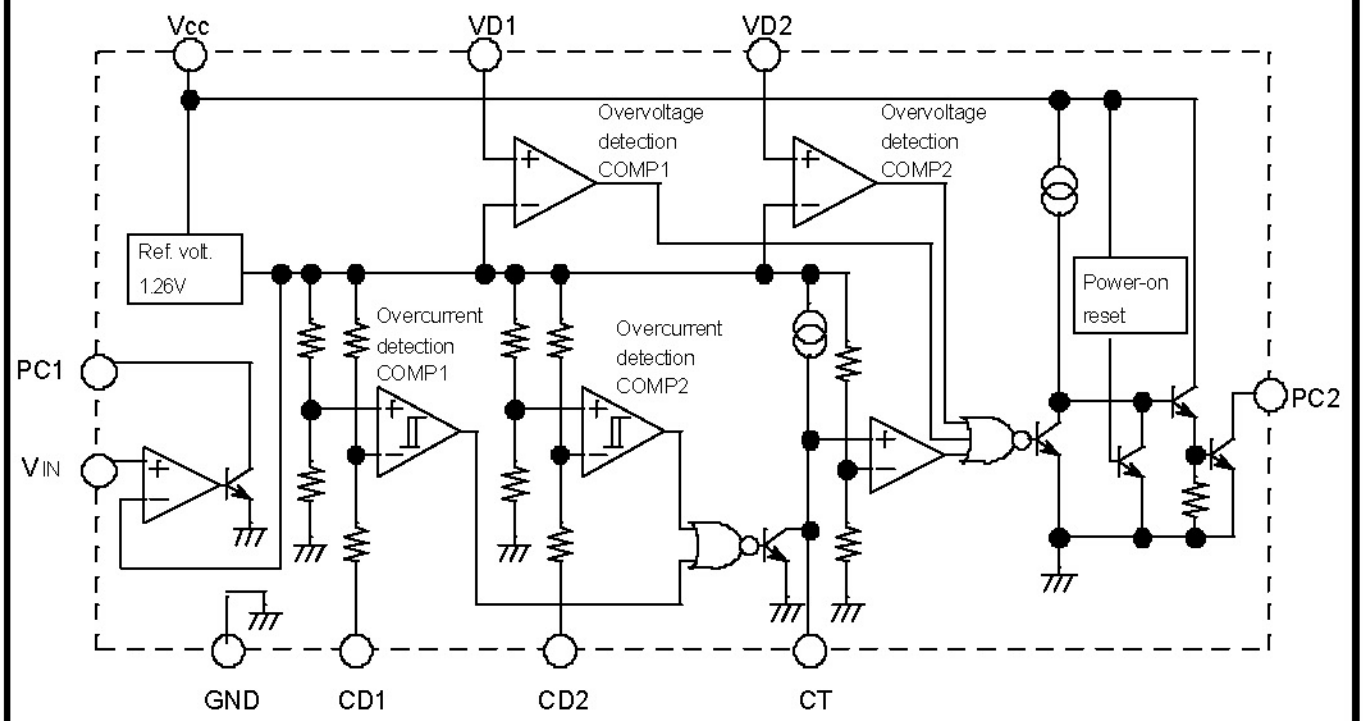

Outline 10P2N-A




Outline 14P4
N.C:NO CONNECTION



BLOCK DIAGRAM



## Terminal description

| terminal No. | symbol | Description on functions |
|---|---|---|
| 1 (1) | Vcc | terminal for power supply |
| 2 (3) | PC2 | output terminal for overvoltage/overcurrent detection signal(open collector output) |
| 3 (4) | CT | delay time setting termianl for overcurrent detection(tpd=400mS@47uF) |
| 4 (6) | VD1 | overvoltage detection terminal(detection vpltage:1.26V) |
| 5 (7) | VD2 | overvoltage detection terminal(detection vpltage:1.26V) |
| 6 (8) | CD2 | overcurrent detection terminal(detection vpltage:-185mV) |
| 7 (9) | CD1 | overvcurrent detection terminal(detection vpltage:-155mV) |
| 8 (11) | GND | GND terminal |
| 9 (12) | VIN | input terminal for voltage control amp. |
| 10 (14) | PC1 | output terminal for voltage control amp.(open collector output) |



ABSOLUTE MAXIMUM RATINGS(Ta=25°C,unless otherwise noted.)

| Symbol | Parameter | Condition | | Ratings | Unit |
|---|---|---|---|---|---|
| Vcc | supply voltage | | | 25 | V |
| IPC | PC1,2 terminal current | | | 10 | mA |
| VPC | PC1,2 terminal voltage | | | 25 | V |
| VVD | VD1,2 terminal voltage | | | 25 | V |
| VCD | CD1,2 terminal voltage | | | -0.3 ~ 1.0 | V |
| Pd | power dissipation | | 10 pin SOP | 440 | mW |
| | | | 14 pin DIP | 1100 | |
| Kq | thermal derating ratio | Ta>25°C | 10 pin SOP | 4.4 | mW/°C |
| | | | 14 pin DIP | 11.0 | |
| Topr | operating temperature | | | -30 ~ +85 | °C |
| Tstg | storage temperature | | | -40 ~ +125 | °C |

ELECTRICAL CHARACTERISTICS(Ta=25°C, Vcc=5V, unless otherwise noted.)

| BLOCK | Symbol | Parameter | Test conditions | Limits | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| | Vcc | supply voltage range | | 5 | 12 | 24 | V |
| | Icc | circuit current | | | 5 | | mA |
| | VREF | reference voltage | | 1.20 | 1.26 | 1.32 | V |
| | VREF/ΔT | ref. voltage temp. coefficient | | | 0.01 | | %/°C |
| | Reg-in | ref. volt. fluctuation over Vcc | Vcc=5V~24V | | 5 | 12 | mV |
| | IinVIN | control amp. input bias current | | -1.0 | | 1.0 | µA |
| | VsatPC1 | control amp.output sat. volt. | IP.C1=5mA | | 0.3 | | V |
| | VDET1 | overvoltage detection volt.1 | 12V system | 1.16 | 1.26 | 1.36 | V |
| | IinVD1 | input current1 | 12V system | -1.0 | | 1.0 | µA |
| | VDET2 | overvoltage detection volt.2 | 3.3V system | 1.16 | 1.26 | 1.36 | V |
| | IinVD2 | input current2 | 3.3V system | -1.0 | | 1.0 | µA |
| | IDET1 | overcurrent detection volt.1 | 12V system | -163 | -155 | -147 | mV |
| | IinCD1 | input current1 | 12V VCD1=155mV | | -100 | | µA |
| | IDET2 | overcurrent detection volt.2 | 3.3V system | -195 | -185 | -175 | mV |
| | IinCD2 | input current2 | 3.3V VCD2=185mV | | -100 | | µA |
| | tdCT | delay time | CT=47µF | 300 | 400 | 500 | msec |
| | VsatPC2 | PC terminal output sat. volt. | IP.C2=5mA | | 0.3 | | V |

## APPLICATION CIRCUIT